Measuring Effective Marginal Tax Rates with Administrative Data

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An extensive literature aims to measure the tax consequences of transfer programs' benefits schedules (Moffitt, 2002; Ben-Shalom et al., 2012). Many papers simulate how benefit cliffs and overlapping phase-outs can produce high effective marginal tax rates (EMTRs) for representative families (Maag et al., 2012; Congressional Budget Office, 2015; Kosar and Moffitt, 2017; Ilin and Sanchez, 2023). Others use reported or imputed income and program participation to estimate EMTRs for a fuller set of actual individuals (Giannarelli et al., 2019; Altig et al., 2024). To identify earnings and benefit receipt, however, these latter studies rely on household surveys, which suffer from important measurement challenges (Meyer and Mittag, 2019; Meyer et al., 2020; Bee et al., 2023).

Survey reliability is a particular concern in this setting for two reasons. First, the highest EMTRs typically bind in narrow income ranges, meaning even minor earnings mismeasurement can yield biased tax rate estimates (Parrott and Greenstein, 2014; Congressional Budget Office, 2015; Shapiro et al., 2016). Earnings misreporting in the CPS and SIPP, especially among lower-income respondents, is well-documented (Abowd and Stinson, 2013; Bollinger et al., 2019; Bee et al., 2023). Second, individuals may face steep benefit phase-outs over wider earnings ranges if they're enrolled in multiple programs simultaneously (Ilin and Sanchez, 2023). Incomplete take-up of these programs is common though, so assuming full participation risks overstating individuals' effective tax rates (Parrott and Greenstein, 2014). On the other hand, survey respondents tend to under-report enrollment in these programs, so relying on self-reported receipt risks understating true participation and thus effective tax rates. Due to these measurement challenges, we still lack clear and reliable evidence on both the prevalence of high EMTRs and the extent to which the interaction of tax and transfer rules affect household behavior.

This paper addresses these longstanding measurement challenges by leveraging restricted-use administrative data at the U.S. Census Bureau combined with an open-source microsimulation tool. With these data, I produce the first comprehensive estimates of benefit-inclusive EMTRs for millions of households across multiple states and years.

I use an unprecedented array of administrative income data. For earnings, I observe the universe of Form W-2s, 1099-MISCs, and 1099-NECs. For taxable income, tax liabilities, and tax credits, I use the universe of Form 1040 filings. For unearned income, I use enrollment records for the country's largest social insurance and safety net programs, including SNAP, TANF, WIC, HUD-funded housing programs, Social Security, SSDI, SSI, Medicaid, and unemployment insurance.

To compute EMTRs, I employ PolicyEngine, an open-source microsimulation tool that models U.S. federal and state income tax rules, payroll taxes, and benefit program rules. As part of this project, PolicyEngine will expand its model to include federal and state program rules for prior years years and all fifty states.

The paper makes multiple contributions to this literature. First, I document the distribution of EMTRs across American households and compare my estimates using administrative data to

those based on survey responses.[1] I also examine heterogeneity in EMTRs across household types, earnings levels, demographics, and geography. The large sample sizes afforded by the administrative data enable precise estimation of EMTR distributions for narrow subgroups, revealing which families face the steepest steepest work disincentives. This comprehensive directory of which combination of federal, state and local programs affect the greatest number of families promises to be a useful resource for policymakers.

Second, I measure the extent of multiple program participation for millions of families spanning several year and multiple states. By documenting the structure of cross-program participation for upwards of ten transfer programs, I provide new evidence on how interactions across social insurance and safety-net programs jointly shape households' post-transfer income as well as their work incentives. Understanding these patterns is critical for measuring EMTRs correctly, but difficult to measure reliably with survey data.

Third, I exploit the panel structure of the administrative data to evaluate whether households face high EMTRs acutely or chronically. Distinguishing between brief versus persistence exposure to high EMTRs is critical for assessing whether these policies "trap" recipients and hinder economic mobility.

Finally, I test whether households respond to tax and transfer incentives by measuring "bunching" at major benefit cliffs and kinks in the tax schedule (Kleven, 2016; Saez, 2010). The universe of administrative records provides sufficient statistical power to detect even modest behavioral responses, in earnings or taxable income, that would be undetectable in survey samples.

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[1] Specifically, I match Current Population Survey Annual Social and Economic Supplement (CPS ASEC) respondents to their respective administrative records. I first estimate EMTRs for this sample first to ensure national representativeness, as well as to identify the effect of replacing survey responses with the administrative data.

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